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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,548	07/01/2004	Luzhou Xu	CN 020001	5116

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EXAMINER

FLORES, LEON

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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09/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/500,548	Applicant(s) XU ET AL.	
	Examiner Leon Flores	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 12-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims (1, 6, 7, and 9-11) have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims (1, 6-7, 9-11) are rejected under 35 U.S.C. 102(e) as being anticipated by Sih et al.(hereinafter Sih) (US Patent 6,608,858 B1)**

Re Claim 1, Sih discloses a rake receiver comprising at least two fingers (In Fig. 7: 700A & B), and a combiner (710) coupled to said fingers (704A), wherein each of the at least two fingers comprises a finger compensator that compensates for frequency shift. (See fig. 7. & abstract)

Re Claim 6, the reference of Sih further teaches that most fingers each comprise a finger compensator, with all finger compensators together forming said compensator. (In Sih, see fig. 7)

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Re Claim 7; the reference of Sih further teaches that said rake receiver comprises a mixer for converting intermediate frequency signals into baseband signals, which mixer comprises an oscillator input coupled to a stable oscillator (In Sih, see fig. 2, where a mixer 112 and an oscillator 220 are disclosed for converting IF signals to baseband signals).

Claim 9, has been analyzed and rejected w/r to claim 1 above. Furthermore, the reference of Sih pertains to a CDMA communications system comprising base stations and mobile units. Communications between base stations and mobile units is by way of mobile telephone switching office (MTSO) and public switch telephone network (PSTN) (In Sih, see col. 1, line 49-55).

Claim 10 has been analyzed and rejected w/r to claim 9 above.

Claim 11 has been analyzed and rejected w/r to claim 9 above.

Claims (2 & 3) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al. (hereinafter Sih)(US Patent 6,608,858 B1), as applied to claim 1 above, and further in view of Ling et al. (hereinafter Ling) (US Patent 6,363,102 B1)

Re Claim 2, the reference of Sih fails to specifically disclose that said finger compensator comprises a filter and an amplitude normalizer coupled serially for receiving an input symbol signal and for generating an output symbol signal.

However, Ling does. (See fig. 3: 160 & col. 7, lines 34-45) Ling discloses a filter and an amplitude normalizer coupled serially for receiving an input symbol signal and for generating an output symbol signal. (See fig. 3: 160) Furthermore, one skilled in the art would know that amplitude normalizer or coefficients are inherent features within a filter.

Therefore, taking the combined teachings of Sih and Ling as a whole, it would have obvious to one of ordinary skill in the art to further incorporate a filter and an amplitude normalizer in the manner as claimed into the system of Sih, for the benefit of producing an estimate of the channel. (See col. 7, lines 34-35)

Re Claim 3, the combination of Sih and Ling further discloses that said finger compensator further comprises a first arithmetical module for multiplying said input symbol signal with a conjugated previous input symbol signal (In Ling, see fig. 2: 140) and a second arithmetical module for multiplying said output symbol signal with a previous output symbol signal as claimed. (It is notoriously well known in the art that in order to mitigate multi-path interference, it is imperative that an auto correlation be performed on a delayed signal and the signal itself.)

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al. (hereinafter Sih)(US Patent 6,608,858 B1) and Ling et al (hereinafter Ling) (US Patent 6,363,102 B1), as applied to claim 2 above, and further in view of Ishizu et al (hereinafter Ishizu) (US Publication 2002/0015438 A1).

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Re Claim 4, the combination of Sih and Ling further teaches a rake receiver characterized in that said at least one finger comprises a pilot channel correlator and a traffic channel correlator (In Ling, see fig. 1: 120 & 130).

But the combination of Sih and Ling fails to specifically disclose an output of said finger compensator being coupled to first inputs of a third and fourth arithmetical module, of which second inputs are coupled to outputs of said correlators.

However, Ishizu does. (See fig. 14: 3d & 3e, paragraph 10) Ishizu discloses a an output of said finger compensator being coupled to first inputs of a third and fourth arithmetical module (See fig. 14: the output of element 3c is coupled to elements 3d & 3e, and the output of each despreader, elements 3a & 3b, are second inputs to elements 3d & 3e), of which second inputs are coupled to outputs of said correlators.

Therefore, taking the combined teachings of Sih, Ling, and Ishizu as a whole. It would have obvious to one of ordinary skill in the art to have modified the system of Sih, as modified by Ling, and as taught by Ishizu, for the benefit of providing phase compensation. (See paragraph 10)

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al. (hereinafter Sih)(US Patent 6,608,858 B1), Ling et al (hereinafter Ling) (US Patent 6,363,102 B1), and Ishizu et al (hereinafter Ishizu) (US Publication 2002/0015438 A1), as applied to claim 4 above, and further in view of Huang et al. (hereinafter Huang) (US Patent 6,154,443)

Re Claim 5, the combination of Sih, Ling, and Ishuzu further teaches wherein said at least one finger comprises an averaging unit (In Sih, see Fig. 7: 710), an input (of the average unit) is coupled to an output of said third arithmetical module (In Ishizu, see fig. 14: the output of element 3e is coupled to a combiner).

But the combination of Sih, Ling, and Ishuzu fails to teach that, and of which an output is coupled to a first input of a fifth arithmetical module, of which a second input is coupled to an output of said fourth arithmetical module.

However, Huang does (see Fig. 2A). Huang teaches a CDMA rake receiver that computes a data detection using FFT matched filters. The rake receiver is comprised of a pilot signal spreading code matched filter, data signal spreading code matched filter, channel frequency response estimation unit, channel matched filter, and a pilot interference cancellation unit. The input of the average unit 104, in Huang et al., is coupled to a delay unit 102 & a multiplier 72. And the output of the average unit 104 is coupled to reserve main paths unit 106, complex conjugate 100, and multiplier 96. There is a second input coupled to unit 96 that comes from another multiplier unit 88. Unit 88 is responsible for despreading the data signal. The examiner is taking into consideration that elements 13, 14 & 16 in the applicant's application correspond to elements 72, 88, & 96 respectively of Huang.

Therefore, taking the combined teachings of Sih, Ling, Ishuzu and Huang as a whole. It would have been obvious to one of ordinary skill in the art to incorporate an input (of the average unit) is coupled to an output of said third arithmetical module and of which an output is coupled to a first input of a fifth arithmetical module, of which a

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second input is coupled to an output of said fourth arithmetical module as claimed into the modified system of Sih, Ling, and Ishuzu, for the benefit of obtaining compensation due to multi- path interference as noted in Huang (see Summary of the Invention).

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Flores whose telephone number is 571-270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER

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August 24, 2007